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Grinding was done with wheel 46M2 /sic 46M3? without a coolant. Analogous interdependencies were obtained in grinding with the use of a coolant.

According to the graph, the productivity of grinding with a black silicon carbide wheel is somewhat higher than with a green silicon carbide wheel.

It was determined by observation that an increase in productivity ceases when the cross feed exceeds 0.06 millimeter and the peripheral speed exceeds 20 meters per second. The best results in both productivity and surface quality are obtained in grinding with a longitudinal feed in the range of 1.0-1.5 meters per minute.

The table below gives data on the surface finish obtained with wheels of different designations and at various cross feeds:

Designation of Wheels	Type of Hard Alloy	Grinding Conditions	Cross Feed (mm/double strokes)				
			0.02	0.03	0.04	0.05	0.06
KZ46M2	VK3	With coolant	1.0	1.05	1.05	1.1	1.2
		Without coolant	1.1	1.2	1.3	1.5	1.75
	T15K6	With coolant	0.5	0.6	0.65	0.75	0.80
		Without coolant	0.8	0.85	0.90	1.05	1.20
KCh46M2	VK3	With coolant	0.95	0.97	1.0	1.05	1.10
		Without coolant	1.1	1.15	1.20	1.35	1.45
	T15K6	With coolant	0.65	0.67	0.70	0.75	0.80
		Without coolant	0.60	0.75	0.90	0.95	1.00
KZ46SM1	T15K6	With coolant	0.80	0.83	0.85	0.90	0.95
		Without coolant	1.5	1.6	1.65	1.80	1.95
KCh46SM1	T15K6	With coolant	0.70	0.75	0.80	0.85	0.90
		Without coolant	1.20	1.23	1.25	1.40	1.50
KZ80SM1	T15K6	With coolant	0.55	0.65	0.75	0.85	0.90
		Without coolant	1.30	1.40	1.50	1.70	1.85

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Designation of Wheels	Type of Hard Alloy	Grinding Conditions	Cross Feed (mm/double strokes)				
			0.02	0.03	0.04	0.05	0.06
KCh20SM1	T15K6	With coolant	0.55	0.65	0.70	0.80	0.90
[sic; KCh80SM1]		Without coolant	1.00	1.1	1.2	1.30	1.45

NOTE: Height mean square is given in microns.

Wheels made of black silicon carbide produce a better surface finish than wheels made of green silicon carbide.

Figures 2 and 3 [appended] show the life of wheels made of black and green silicon carbide of different hardness.

Research work on wheels made of black silicon carbide has shown that by conforming to the above-specified conditions, they can be used successfully in grinding single-carbide hard alloys and certain types of two-carbide alloys, for example, T5K10 and T15K6. -- B. S. Korshunov and L. K. Petrosyan

FLEXIBLE GRINDING WHEELS SAVE TOOL METAL, INCREASE LABOR PRODUCTIVITY -- Moscow, Komsomol'skaya Pravda, 29 Jul 53

Flexible grinding wheels are being used successfully in Soviet industry for grinding curved grooves 1-2 millimeters wide.

In making flexible grinding wheels, a piece of crude rubber is softened between rollers. An abrasive powder is sprinkled and intermixed with the rubber, after which this mass is rolled and cut in circles. Depending on the purpose for which the wheel is to be used, its thickness ranges from several millimeters to 2-3 centimeters. The wheel is placed on a pan and put in a vulcanizing furnace at a temperature of 70-80 degrees [centigrade] for 30 minutes. When it emerges, it is a strong, flexible, and elastic rubber with grains of abrasive powder virtually "soldered" in it.

Drills, taps, milling cutters, and other tools in which flutes and grooves have been ground with flexible wheels operate better and last longer than those ground with ordinary wheels. This new type of grinding tool is making it possible to save expensive tool metal and increase labor productivity.

These wheels are being used very extensively in grinding irregularly shaped parts. For example, the body of passenger cars is ordinarily finished with emery cloth before painting. Areas that are not easily accessible with emery cloth are now ground with flexible grinding wheels. [redacted] page 4, for earlier report on flexible grinding wheels.

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[Appended figures follow.]

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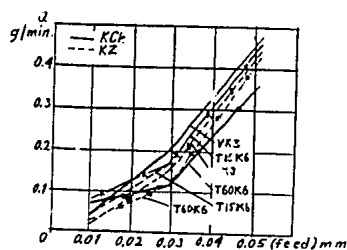
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Figure 1

KCh - Black silicon carbide wheels
KZ - Green silicon carbide wheels

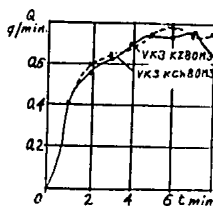


Figure 2

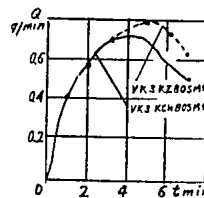


Figure 3

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